

(2)

$$Z_1 = W_1 A_{in} + b_1 = \begin{bmatrix} 3 & 2 & -1 & 0 & -3 & 2 \\ 4 & -1 & 2 & 3 & 5 & -6 \\ 2 & -1 & 3 & 4 & -3 & 1 \\ 6 & -4 & 2 & -5 & 1 & 2 \end{bmatrix}$$

$\begin{array}{c|cc} 1 & 2 \\ \hline 4 & 5 \\ \hline 1 & 3 \\ \hline 3 & 1 \\ \hline 1 & 4 \\ \hline 2 & 1 \end{array} + \begin{array}{c|cc} 1 & 2 \\ \hline 1 & 1 \\ \hline 2 & 1 \end{array} - \text{broadcasted!}$

$$= \begin{bmatrix} 12 & 4 \\ 2 & 16 \\ 13 & 2 \\ -16 & 1 \end{bmatrix}$$